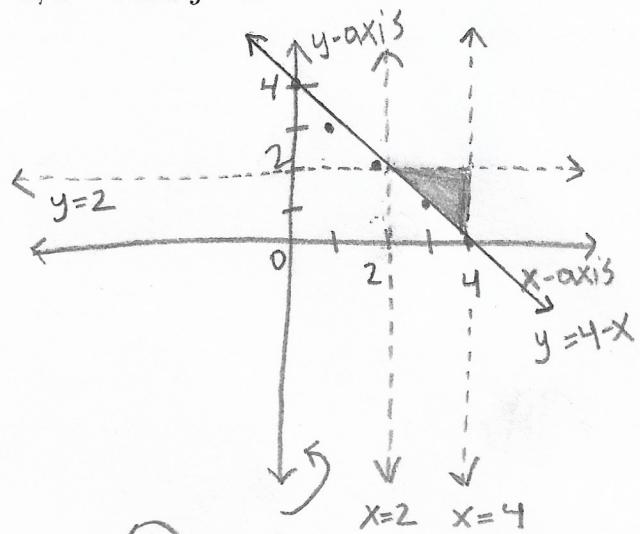


Quiz 2

1. Sketch (shade in) the region R bounded by $y = 4 - x$, $x = 2$, $x = 4$ and $y = 2$.



2. Find the volume of the solid obtained by rotating R around the y -axis.

$$V = \int \pi (f(y))^2 dy$$

$$\begin{cases} R = f(y) \\ y = 4 - x \\ x = 4 - y \end{cases}$$

$$V = \int_0^2 (4-x)^2 dy$$

$$V = \int_0^2 (4-y)(4-y) dy$$

$$V = \pi \int_0^2 (16 - 4y - 4y + y^2) dy$$

$$V = \pi \int_0^2 (y^2 - 8y + 16) dy$$

$$V = \pi \left[\frac{y^3}{3} - \frac{8y^2}{2} + 16y \right] \Big|_0^2$$

$$V = \pi \left[\frac{y^3}{3} - 4y^2 + 16y \right] \Big|_0^2$$

$$V = \pi \left[\frac{(2)^3}{3} - 4(2)^2 + 16(2) \right] - 0$$

$$V = \pi \left[\frac{8}{3} - 16 \cdot 32 \right] - 0$$

$$V = \pi \left[\frac{8}{3} + 16 \right] - 0$$

$$V = \pi \left[\frac{8}{3} + \frac{48}{3} \right]$$

$$V = \frac{56\pi}{3} \text{ units}^3$$